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# THE WATERSHED WAY to improving the environment in Kansas



Soil Conservation Service  
U.S. Department of Agriculture  
Salina, Kansas

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## Watershed Projects-Getting the Job Done

Watershed projects under Public Law 566, the Watershed Protection and Flood Prevention Act, are big business in Kansas.

Since the start in 1953 with five pilot projects covering 83,353 acres, local sponsors have made 100 applications for assistance in developing watershed projects. These cover over

one-fifth of the state, a total of 10,855,182 acres.

An outstanding conservation treatment program has been carried out in this state since the early Dust Bowl days of the 1930's. The wet years of the 1940's and the disastrous floods of 1951 showed the need for additional protection by water-



Upstream land treatment--terraces, contour farming, grassed waterways, and a conservation cropping system--is the foundation of flood prevention in all watershed projects. This was being done in Wolf River Watershed in Brown County before the project reached the planning stage.

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shed structural measures.

Construction of the first Public Law 566 floodwater retarding dam was started in 1957. Since then construction has taken place in 36 watersheds, of which 17 have been completed. This involves the construction of 6 grade stabilization structures; 11 miles of floodways; 28 miles of channel work; and over 375 reservoir-type structures, 6 of them multiple-purpose lakes.

Watershed development has made a significant impact on flood damage reduction and recreation development. Over 10,000 surface acres of water exist as a result of the watershed program in Kansas. This extensive water area is helping to satisfy the recreation needs of the communities involved.

#### Some flood control benefits:

1. Upper Verdigris Watershed project, Greenwood County, gave \$691,000 worth of benefits in heavy rains of July 11-12, 1972.

2. Protection was excellent in Silver Creek Watershed, Chase County, during heavy rains of May 31 and June 2, 1971. Heavy damage occurred in an adjacent unprotected watershed.

3. Heavy rains fell over a wide area of southcentral Kansas on April 18, 1970. There was excellent protection in Little Walnut-Hickory Watershed, Butler County. Rock Creek and Muddy Creek Watersheds, Butler and Cowley Counties, had sharp comparisons between protected and unprotected areas. Damage was heavy in unprotected Grouse Creek Watershed, Cowley County; and in unprotected Upper and Lower Elk River Watersheds in Elk County. Completed dams in Big Caney Watershed (Chautauqua,

#### COVER PHOTO

Bee Creek Pilot Watershed dam in Chautauqua County, built in 1954, has a long record of success in reducing flood damage and furnishing recreation. The owner rents cabins at far right. The large building between the two arms of the lake and the adjacent waterfront area are used by the Se-Kan Scout Council.

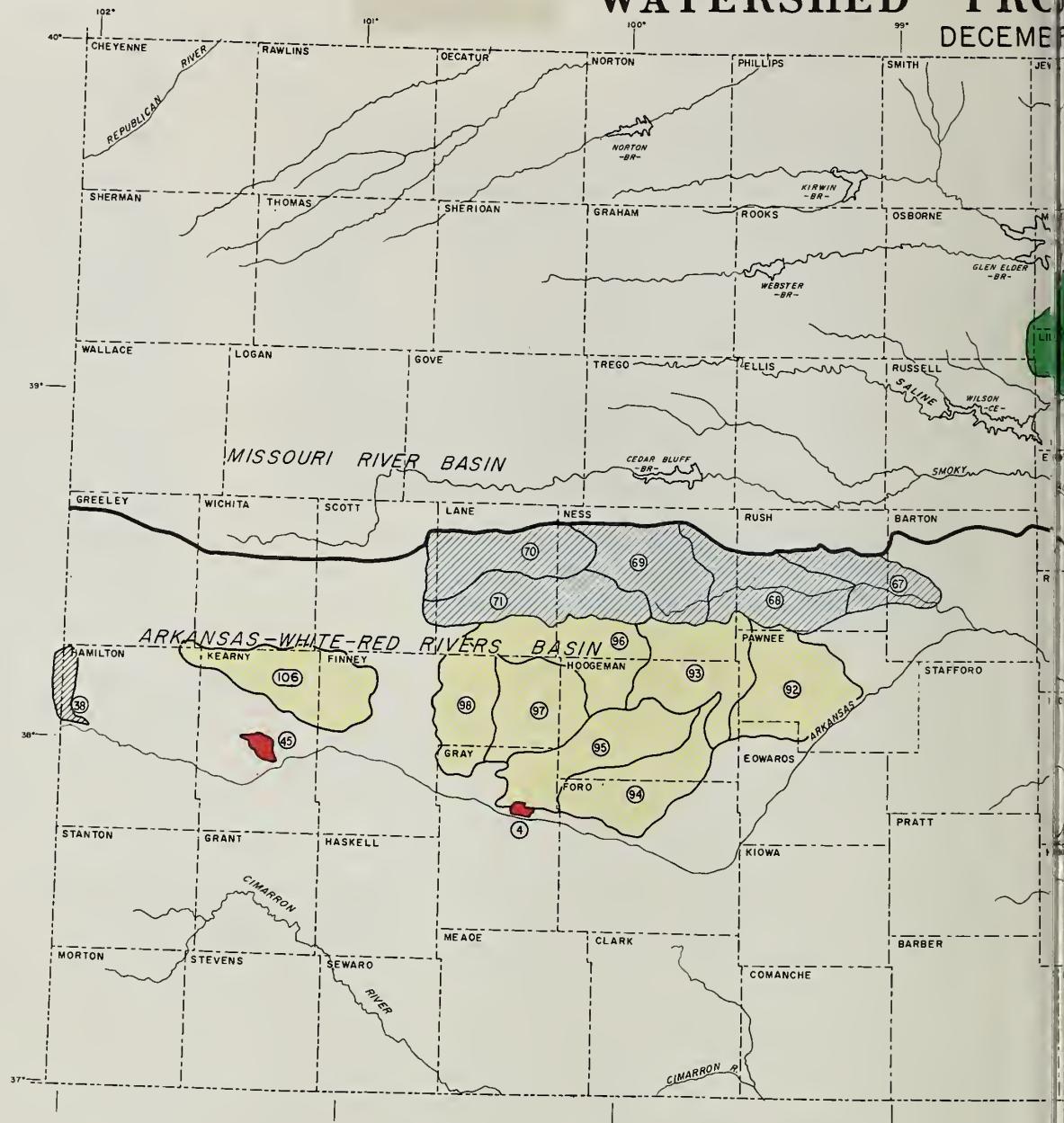
Cowley, and Elk Counties) gave significant protection.

4. Six to 11 inches of rain fell on September 15-16, 1969, in Bee Creek Watershed, Montgomery and Chautauqua Counties. But there was little flood damage.

5. Heavy rains caused \$101,000 damage around Madison in Greenwood County July 23-26, 1968. But that's 74% less damage than would have occurred without the 34 dams then completed in Upper Verdigris Watershed.



This floodwater retarding dam in Frog Creek Watershed, Coffey County, reached its flood storage capacity when 11 inches of rain fell in three days in June 1967. Benefits from the 11 dams in the watershed were estimated at \$132,000, while millions of dollars of damage occurred in unprotected watersheds in that period.



## P. L. 566 WATERSHEDS

	ACRES		ACRES		
1. WALNUT CREEK	80,594	28. GRASSHOPPER-COAL CREEK	61,440	54. UPPER WALNUT NORTH	169,820
2. NORTH OTTER CREEK	13,500	29. MUDDY CREEK	29,960	55. UPPER WALNUT SOUTH	112,180
3. GYPSUM CREEK	167,680	30. ROCK CREEK	85,850	56. ROCK CREEK WATERSHED #45	126,000
4. CIMARRON WATERSHED	6,440	31. TURKEY CREEK	107,226	57. WHITEMATER EAST	153,000
5. THOMPSONVILLE WATERSHED	4,062	32. IRISH CREEK	30,586	58. WHITEMATER WEST	174,960
6. ANAOLE WATERSHED	16,421	33. NORTH BLACK VERNILLION	104,416	59. MIDDLE CREEK	43,311
7. FROG CREEK	22,496	34. UPPER BLACK VERNILLION	54,886	60. BIG SUGAR CREEK	203,350
8. CLEAR CREEK	38,800	35. SHUNGUNUNG WATERSHED	23,506	61. MT. HOPE WATERSHED	23,078
9. SPRING CREEK	27,810	36. UPPER WAKARUSA WATERSHED	234,944	62. NARGIS CREEK	6,300
10. UPPER BIG STRANGER CREEK	190,923	37. LOWER WAKARUSA WATERSHED	94,977	64. ORY CREEK	15,100
11. LOWER BIG STRANGER CREEK	156,671	38. CHEYENNE CREEK (COLO.)	8,970	65. CEODAR CREEK	32,740
12. NUMBOLOT WATERSHED	30,458	39. LITTLE DELAWARE-MISSION	61,120	66. SWITZLER CREEK	20,200
13. BEE CREEK	45,360	40. MISSION CREEK (NEBR.)	12,820	67. WET WALNUT NO. 1	132,600
14. LITTLE WALNUT-NICKORY	171,510	41. GOOSE CREEK	33,300	68. WET WALNUT NO. 2	244,920
15. UPPER VERDIGRIS RIVER	210,860	42. TIMBER CREEK	101,700	69. WET WALNUT NO. 3	226,100
16. UPPER FALL RIVER	200,001	43. ELK CREEK	91,115	70. WET WALNUT NO. 4	214,100
17. GRANT-SHANGAI	25,200	44. LYONS CREEK	179,776	71. WET WALNUT NO. 5	201,200
18. NEBO CREEK	9,360	45. LAKIN WATERSHED	10,806	72. DIAMOND CREEK	102,600
19. SILVER CREEK	18,418	46. BUFFALO CREEK	213,560	73. MIDDLE CREEK	72,838
20. UPPER BIG CANEY	142,500	47. BIG CREEK	84,100	74. MIDDLE WALNUT	182,131
21. LOWER BIG CANEY	139,380	48. SPILLMAN CREEK	119,360	75. DEER CREEK	71,900
22. BIG CREEK	70,972	49. UPPER ELK RIVER	138,800	76. DUCK CREEK	42,320
24. WHITE CLAY-BREWERY-WHISKEY	12,540	50. LOWER ELK RIVER	130,440	77. SANO CREEK	64,300
25. TWIN CANEY	98,370	51. CROSS CREEK	113,786	78. WOLF RIVER	150,369
26. MIDDLE CANEY	100,210	52. UPPER SALT CREEK	205,998	79. ARK TRIBS	35,300
27. WALNUT-BRUSH-LITTLE SLOUGH	60,938	53. LOWER SALT CREEK	93,875	80. COTTON-COON-MISSION (OKLA.)	2,528

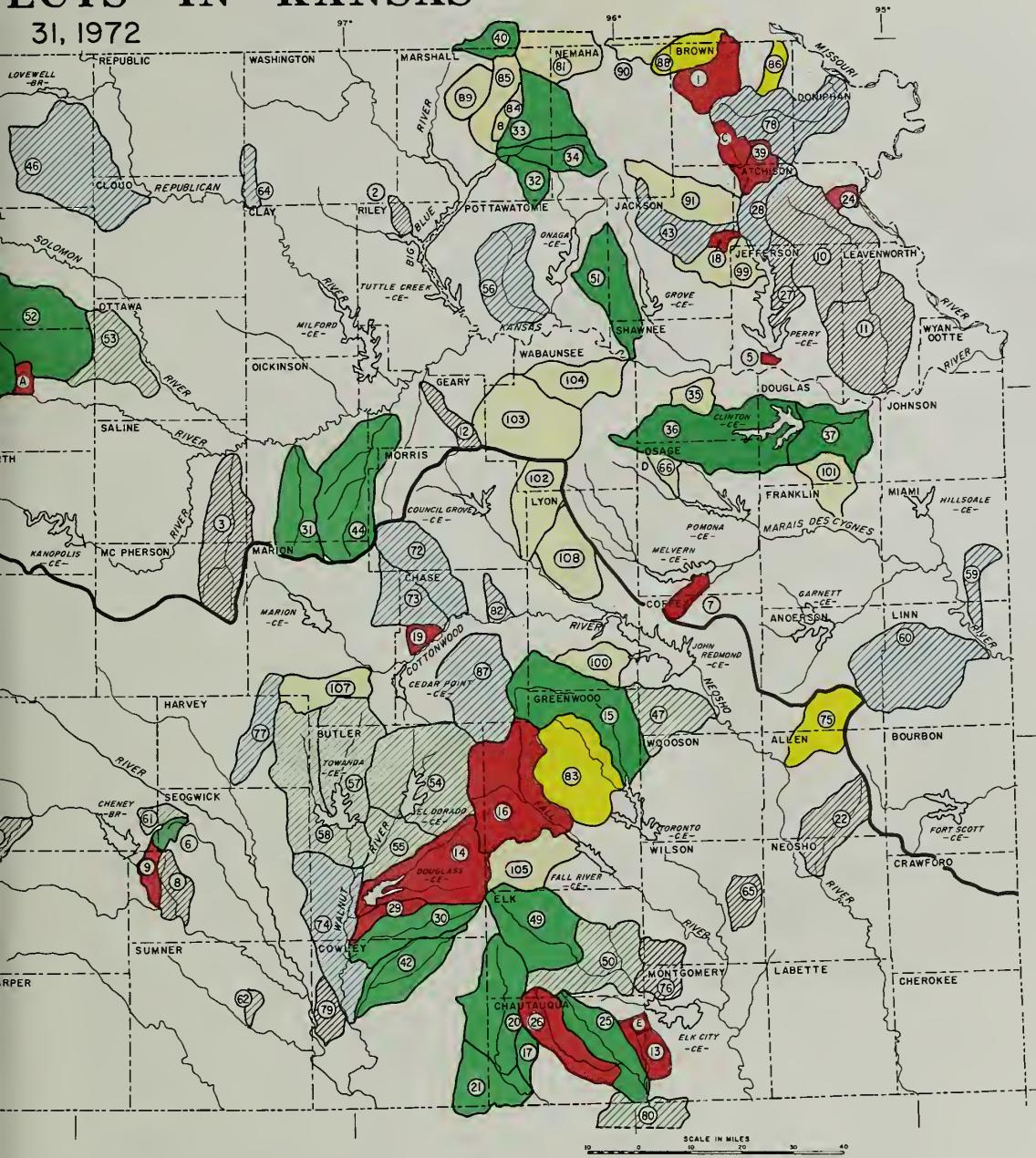
## SOURCE:

SCS DRAWINGS 5-R-19,914 (1964), 5-P-22,312 (1965),  
KANSAS WATER RESOURCES BOARD MAP OF FEDERAL  
WATER PROJECTS IN KANSAS (DEC. 1965) AND USGS  
BASE MAP OF KANSAS (1963). (LAMBERT CONFORMAL  
CONIC PROJECTION).

# PROJECTS IN KANSAS

SOIL CONSERVATION SERVICE

31, 1972



## ACRES

81. TURKEY CREEK (NEBR.)	59,940
82. PEYTON CREEK WATERSHED	21,800
83. WALNUT-WEST	179,490
84. SNipe CREEK	16,420
85. VERMILLION (ROBIDOUX)	62,294
86. ROY'S CREEK	27,740
87. SOUTH FORK	179,005
88. PONY CREEK	37,540
89. SPRING CREEK	37,000
90. SOUTH FORK, NEMANA (NEBR.)	24,960
91. SPRING-Straight CREEK	91,810
92. PAWNEE WATERSHED NO. 1	242,360
93. PAWNEE WATERSHED NO. 2	244,000
94. PAWNEE WATERSHED NO. 3	231,717
95. PAWNEE WATERSHED NO. 4	241,040
96. PAWNEE WATERSHED NO. 5	235,720
97. PAWNEE WATERSHED NO. 6	200,000
98. PAWNEE WATERSHED NO. 7	188,400
99. CEDAR CREEK	70,295
100. EAGLE CREEK	48,904
101. TAUY CREEK	52,780
102. ROCK CREEK	93,000
103. UPPER MILL CREEK	172,360
104. LOWER MILL CREEK	97,440
105. OTTER CREEK	89,938
106. JAMES DRAK	248,800
107. DOYLE CREEK	87,784
108. ALLEN CREEK	87,000

## P. L. 566 WATERSHEDS

APPLICATION APPROVED	AUTHORIZED FOR INSTALLATION
PRIORITY FOR PLANNING	UNDER CONSTRUCTION
AUTHORIZED FOR PLANNING	CONSTRUCTION COMPLETED
PLANNING COMPLETED	TERMINATED OR NOT FEASIBLE

## PILOT WATERSHEDS

	ACRES
A. LOST CREEK	12,326
B. SNipe CREEK	16,420
C. LITTLE DELAWARE-MISSION CREEKS	27,971
D. SWITZLER CREEK	19,910
E. AIKEN CREEK	6,726

## MAJOR RESERVOIRS

-CE-		CORPS OF ENGINEERS
-BR-		BUREAU OF RECLAMATION



Flood protection was needed in Middle Caney Watershed, Chautauqua County. And the City of Sedan needed additional water supply. A multiple-purpose dam was built in 1965 to form the 70-acre Sedan Lake. The city shared in the cost of the dam to provide 660 acre-feet of municipal water storage, in addition to the flood water storage capacity provided by federal funds.



Multiple use of a "single-purpose" lake--fishing in a flood control reservoir in Frog Creek Watershed, Coffey County.

## Multiple-Use Lakes

The main purposes of the watershed program are inherent in the name of the enabling legislation, the Watershed Protection and Flood Prevention Act.

In Kansas much emphasis is being placed upon multiple uses of the water stored in watershed lakes. Benefits from multiple uses of watershed works are substantial. Such uses include: flood control, irrigation,



Scouts enjoy canoeing, fishing, and swimming at Quivira Scout Lake in Twin Caney Watershed, north of Sedan in Chautauqua County. When a floodwater retarding dam was built on the Quivira Scout Council Ranch, the Council paid to enlarge the dam so that an additional 8,710 acre-feet of water was provided for recreation.

recreation, fish and wildlife, municipal and industrial use, and livestock use. Improved water quality is another benefit.

Though most Kansas watershed reservoirs are "single-purpose," they frequently have some combination of multiple uses in addition to flood protection. Such dams have been financed solely on the basis of flood control benefits exceeding the cost of construction.

However, there are also a number of "multiple-purpose" reservoirs in Kansas. Multiple-purpose dams often provide a sizable savings both to the federal government and to local groups over developing the services provided in several single-purpose dams.

Completed multiple-purpose reservoirs in Kansas include: Caney, Sedan, and Quivira Lakes in Chautauqua County; Eureka and Madison Lakes in Greenwood County; and Winfield Lake in Cowley County.

The watershed way speaks for itself in improving the environment in Kansas.



One of the floodwater retarding dams in Twin Caney Watershed, Chautauqua County, forms Timber Hill Lake. This lake provides a supplementary municipal water supply for the City of Caney. The landowner developed a recreation area around the lake, with SCS technical assistance and a Farmers Home Administration loan.



A prime example of a multiple-purpose watershed reservoir in Kansas is Winfield Lake in Timber Creek Watershed, Cowley County. Flood detention storage is 5,035 acre-feet of water. The City of Winfield purchased an additional capacity of 9,038 acre-feet of municipal water supply and 9,037 acre-feet of water for recreation. Camping by one of the nation's largest watershed lakes is a Kansas Wildlife Federation group.



Heavy rains on April 18, 1970, produced sharp contrasts in protected and unprotected areas. Five inches of rain in six hours caused much flood damage above a watershed dam in Muddy Creek Watershed, Butler, County.

## Flood Control Benefits



In contrast to the scene at the top of the page, this bottomland field of wheat was undamaged by the storm. It is three miles downstream in Muddy Creek Watershed -- below a watershed dam.



The April 1970 storm extended into Elk County, where the north part of the City of Moline was flooded. A watershed dam is planned in Upper Elk River Watershed that will provide protection to the city and surrounding farm land.



Although eight inches of rain fell in six hours in the vicinity of this bottomland farmstead and field, no flooding occurred. The flood plain was protected by eight watershed dams in Rock Creek Watershed, Butler and Cowley Counties. Rainfall averaged over five inches in six hours over the entire watershed during the April 18, 1970, storm.